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January 2008

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Adams, Daniel R.; Luebbe, Matt K.; Klopfenstein, Terry J.; and Erickson, Galen E., "Sorting Steers by Weight into Calf-Fed, Summer Yearlings and Fall Yearling Feeding Systems" (2008). *Nebraska Beef Cattle Reports*. 30.

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Sorting Steers by Weight into Calf-Fed, Summer Yearlings and Fall Yearling Feeding Systems

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Summary

Sorting steers into one of three different feeding periods — calf-feds, summer yearlings, and fall yearlings — resulted in no differences in performance or average carcass characteristics. Sorting decreased the amount of variation in hot carcass weight and carcasses over 950 lbs.

Introduction

Cattle are ideally sorted by placing the heaviest calves at weaning into the calf-fed feeding system. The lightest calves at weaning would enter the fall yearling feeding system and the middle weight calves would enter the summer yearling feeding system. Our study was designed to determine if sorting into feeding systems by weight would decrease variation in feedlot performance and carcass characteristics.

Procedure

Two-day weights were collected on a group ($n = 288$) of ranch direct calves that were received in November with average BW of 591 lb (374 to 870 lbs). Cattle were limit fed at 2% of body weight for five consecutive days before the 2-day BW. From the 2-day BW, cattle were assigned randomly into one of two different groups, sorted and unsorted cattle. At this time, the cattle in the unsorted group were assigned randomly to calf-feds, summer yearlings or fall yearlings. For the sorted group, the heaviest 1/3 were placed into the calf-fed feeding system. The remaining 2/3 were placed on cornstalks with the summer and fall yearlings from the unsorted

group. The sorted and unsorted cattle grazed cornstalks and grass as one group. In April, when the summer and fall yearlings were removed from cornstalks, 2-day BW were collected and the cattle in the sorted group were assigned into either the summer yearling or fall yearling feeding system based on BW. The heaviest 1/2 of the remaining 2/3 of the sorted group entered the feedlot as summer yearlings. The lightest 1/2 of the remaining 2/3 of the sorted group were then placed into the fall yearling feeding group. The summer yearling cattle entered the feedlot in late May and were fed until mid October when marketed. The fall yearlings were taken to the Sandhills to graze native range. The fall yearlings grazed native range until late September when the cattle entered the feedlot. Fall yearlings were marketed in January.

The calf-fed feeding system consisted of placing the calves at arrival into the feedlot and feeding a high concentrate diet. Two-day weights were collected in November at the beginning of the finishing phase. The calves were fed until May when harvesting occurred. Cattle placed in the summer yearlings and fall yearling groups were weighed at arrival like the calf-feds. The cattle in these groups were then placed on cornstalks for the winter months. During the time of stalk grazing, cattle were supplemented with 5 lb/head daily of wet corn gluten feed (DM basis) to achieve a 1.5 lb ADG. At the end of winter, the cattle were removed from stalks and 2-day BW were collected (April 20). The cattle grazed smooth brome grass pastures until the end of May. At the end of May, cattle in the summer yearling groups were placed into the feedlot after 2-day BW were collected and were fed until October. The cattle in the fall yearling feeding system were taken to a Sandhills ranch to graze Sandhills range for the remainder of the summer. In the early fall,

about Sept. 15, cattle were removed from pasture, weighed on two consecutive days and fed in the feedlot until January.

At the time of slaughter; hot carcass weight (HCW), rib eye area, 12th rib back fat, and quality grade were collected at the plant and USDA Yield Grade was calculated ($YG = (2.5 + (2.5 \times \text{fat}) + (0.2 \times \text{KPH}\%) - (0.332 \times \text{REA}) + (0.0038 \times \text{HCW}))$). Final BW was determined from HCW by dividing the HCW by an average dressing percentage of 63% and the final weight used to determine performance in the feedlot.

Results

There were no difference in DMI, ADG, and F: G between the sorted and unsorted groups of cattle (Table 1). There was no effect of sorting on HCW, ADG, and F: G, fat thickness, marbling, or number of cattle with $YG \geq 4$ ($P > 0.21$). Sorting increased average initial weights of calf-feds by 91 lb and reduced the average initial feedlot weights of fall yearlings by 64 lb. Sorting also decreased the amount of variation in initial feedlot BW and HCW. Essentially all of the values fall within ± 3 standard deviations (SD) of the mean. In the summer yearlings, sorting decreased the SD by 38 lb, and in the fall yearlings, sorting decreased the SD by 51 lb. The HCW SD was decreased by 33 lb in the summer yearlings and 32 lb in the fall yearlings.

The calf-fed system had the lowest DMI while the fall yearlings had the highest DMI. The calf-fed cattle had the lowest ADG but were the most efficient. The fall yearling cattle were the least efficient of the three feeding systems. These data are consistent with previous research (2007 Nebraska Beef Report, pp. 58-60).

Sorting cattle into feeding systems decreased the number of carcasses over 950 lb and 1,000 lb (Table 2). The unsorted group for the fall yearlings

Table 1. Performance data.

Feeding System	Calf Feds		Summer Yearling		Fall Yearlings		SEM	System	P-value Sorting	System*Sorting
	unsort	sort	unsorted	sort	unsort	sort				
Initial BW ^a	605	696	824	823	1008	944	4	<0.01	0.02	<.01
IW ^b SD	66	57	71	33	121	70				
HCW	777	820	867	865	933	878	8	<.01	0.83	<.01
HCW ^c SD	68	68	77	44	10	5 73				
DMI	20.92	21.49	25.75	25.75	28.91	27.25	0.28	<.01	0.20	<.01
ADG	3.76	3.72	4.15	4.14	4.08	3.87	0.08	<.01	0.22	0.50
F:G	5.56	5.78	6.17	6.21	7.09	7.04	0.10	<.01	0.23	0.27

^aFeedlot entry weight^bInitial weight standard deviation^cHot carcass weight standard deviation**Table 2. Overweight carcass data by feeding system.**

Feeding System	Sort/Control	Carcasses over 950 lb	Carcasses over 1000 lb
Calf-fed	Unsorted	2%	0%
Calf-fed	Sorted	6%	2%
Summer Yearling	Unsorted	19%	2%
Summer Yearling	Sorted	4%	0%
Fall Yearling	Unsorted	42%	23%
Fall Yearling	Sorted	11%	2%

had 42% of the carcasses over 950 lbs compared to only 11% in the sorted group. In the summer yearlings, the unsorted group had 19% over 950 lb while the sorted summer yearlings only had 4% over 950 lb. In the fall yearling unsorted group, 23% of the carcasses were over 1,000 lb while only 2% in the sorted group of fall

yearlings.

When combining all of the unsorted groups together and all of the sorted groups together, the carcass weights were 858 lb (SD=66 lb) for sorted cattle compared to 859 lb (SD=105 lb) for the unsorted cattle. The combined unsorted group had 21% of the carcasses heavier than 950

lbs while only 7% of the carcasses were over 950 lbs in the combined sorted group.

Sorting cattle decreased the variation of HCW and the number of overweight carcasses without affecting fat thickness. Sorting worked well because cattle were able to be marketed in more uniform groups. The number of carcasses over 950 lb was lower and the amount of variation was also lower within the feeding periods without affecting the performance or carcass characteristics.

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